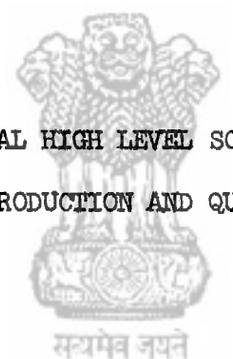
REPORT OF THE NATIONAL HIGH LEVEL SCIENTIFIC COMMITTEE FOR PLANT AND ANIMAL INTRODUCTION AND QUARANTINE



INDIA

JULY, 1971.

NATIONAL HIGH LEVEL SCIENTIFIC COMMITTEE FOR PLANT AND ANIMAL INTRODUCTION AND QUARANTINE

The Government of India, Ministry of Food, Agriculture & Community Development vide resolution no. 3(2)/69-AS-III/S.C. II dated 11th August,1970, set up a High Level National Scientific Committee to consider the suggestions for amending the existing rules and regulations relating to plant and animal introduction and quarantine and also to suggest the action to be taken on some important recommendations made at the work-shop held in September,1969, on Plant Introduction & Quarantine (Appendixes I & II).

The Committee held four main meetings on following dates: 7th September,1970; 17th November,1970; 3rd February,1971 and 12th April,1971.

In addition to the members mentioned in the Gazette notification, representatives from other concerned departments also participated in deliberations of the Committee at various meetings by special invitation.

Besides the main meetings of the Committee, meetings of smaller groups for matters relating to Plant Science, Animal Science, Policy Matters and Domestic Quarantine (Animal & Plant) were also held from time to time.

The list of special invitees and others who helped in the deliberations in various groups and at main meetings is given in Appendix III.

Some of the Committee members and invitees visited the Division of Plant Introduction and its Post-entry Quarantine Units located in the Divisions of Entomology, Nematology and Mycology and Plant Pathology at the Indian Agricultural Research Institute, New Delhi, to see the existing arrangements and facilities and the procedures being followed for Plant Introduction and post-entry Quarantine work. The Chairman visited the sea and air ports at Calcutta to see the facilities and arrangements for plant quarantine and fumigation under the Directorate of Plant Protection and Quarantine of the Ministry of Agriculture.

At its first meeting, the Committee called for outline information on current procedures on plant and animal introduction and quarantine in India

and in some foreign countries quite advanced in this regard, such as Australia, USA, USSR, Japan and Kenya. A list of problems the plant and animal introduction agencies faced vis-a-vis the officials of various Ministries of Government of India also came up for consideration. The Committee, therefore, invited representatives from all concerned Ministries to participate in its subsequent meetings. At the second meeting, four working groups were constituted for Plant Science, Animal Science, Policy Matters and Procedural Matters. Draft materials furnished by these groups were critically discussed and revised in the next two meetings. A number of hurdles in the way of smooth functioning of the plant and animal introduction and quarantine operations that had assumed insurmountable proportions, were finally resolved. Additional facilities and staff needed for these organisations and creation of Standing Committees to oversee their operations, are among the main recommendations incorporated in the Report of this Committee.

C O N T E N T S

Part I
Part I

PLANT INTRODUCTION AND QUARANTINE

Part II

ANIMAL INTRODUCTION AND QUARANTINE

M A P S

APPENDIXES

P A R T I

PLANT INTRODUCTION AND QUARANTINE

1. ROLE OF PLANT INTRODUCTION IN AGRICULTURE

1.1 Plant Introduction has played and shall continue to play a pivotal role in the development of agricultural and allied resources of a country. The prehistoric plant introduction activity led to domestication of plants in areas now recognised as centres of origin of crops. Parts of India belong to such centres (areas) of origin for some types of paddy, desi cotton, jute and pulses; as also black pepper, brinjal, cucumber, mango etc.

1.2 In historic period, gifts for India's plant wealth from other centres of origin of crops were: bajra, jowar, sesame, castor, bhindi and coffee from Africa; wheat, barley, linseed, pea, gram, musk melon, fig, almond and grapes from Central and South West Asia; Citrus (some), banana, coconut, cardamom, turmeric and nutmeg from South East Asia; soybean and tea from China; oats, lettuce, garlic, cabbage and cauliflower from Europe; maize, French bean, American cotton and guava from Mexico; several cucurbits from Central America; potato, sweet potato, tomato, papaya and tobacco from Peru; and tapioca, groundnut, cocoa, pineapple, cashewnut and rubber from Brazil-Paraguay area. This is not a complete list.

1.3 Plant Introduction activity, in every country, started with the introduction of new crops and economic plants. As plant science activities developed and plant scientists put forth new targets for breaking the yield barriers, it was increasingly felt that the basic requirement of a plant breeder is extensive germplasm of diverse origins. Rightly so, therefore, there has been an ever increasing movement of genetic material from one part of the world to the other. Presently in India, genetic destruction of yield barriers in wheat and maize has been accomplished in record time by introductions from Mexico and Central America. Similar achievements are in the offing in paddy due to introductions from Taiwan and Philippines; and in bajra and sorghum due to introduction of diversified sources of male sterility for hybrid seed production in these crops. In recent years, attempts have been made to augment germplasm collections in several other economic plants

with encouraging results. The main cases are dwarf hybrid Coconuts, new rubber clones, grapes and pome fruits, sugarbeet, soybean, sunflower, potato, Red oil Palm, cocoa, hops etc. There is need to build up similar broad-based germplasm in other crops, such as pulses, oilseeds, and plantation crops including tea, coffee, and forestry species.

2. PHYTOSANITARY CONSIDERATIONS

2.1 In the past, man often transported unwittingly weeds, pests and pathogens along with the introduced plant materials. In the historic period, the plant introduction agencies in many cases got wiser only after the events. Plant quarantine regulations formulated and revised from time to time in many countries were products of this wisdom gained through experience.

2.2. There is no doubt that there can be a real danger of introducing new pests and diseases along with the introduced material if proper care is not taken to see that only healthy plant material gets dispersed in the country for experimental or other uses.

2.3 In India, we are well aware of the introduction of San Jose Scale of apples, bunchy top of bananas, golden nematode of potato in the Nilgiris and the wart disease of potato in Darjeeling hills area. Similarly, seed borne bacterial diseases of many crops including vegetable Brassicas and paddy; and virus of pulse crops, tapioca and citrus have come in. There are well known exotic harmful weeds such as Lantana, water hyacinth and host of others. Even within the country uncontrolled movement of diseased propagating material has resulted in and continues to cause substantial economiq losses.

2.4 Such events of the past make a case for the need for establishing well organised and well integrated plant introduction and quarantine agencies so that plant scientists and other enthusiasts are able to have a free flow of healthy plant material which can be used for experimental and other pur-

poses and at the same time keep the harmful plants, pests, disease causing organisms under check. Phytosanitary considerations should be pre-condition to the dispersal of any plant material.

3 EXISTING PLANT INTRODUCTION PROCEDURES:

3.1 Plant propagation materials are at present imported from foreign countries by several Government and private agencies. These introductions comprise both seeds and vegetative propagation materials of agri-horticultural crops, forest species and species of general botanical interest. The Government of India (Ministry of External Affairs) have banned or restricted exchange of plant material with certain countries on political considerations.

3.2 Realising the importance of controlled plant introduction activity for providing adequate safeguards to our plant wealth from pests and diseases, the Ministry of Food and Agriculture, Government of India, had authorized three agencies to carry out this work scientifically subject to quarantine check by Directorate of Plant Quarantine . They are: Division of Plant Introduction at the Indian Agricultural Research Institute (under the Indian Council of Agricultural Research) for agri-horticultural plants; Forest Research Institute, Dehra Dun, for plants of forestry interest and Botanical Survey of India for plants of general botanical interest. To systematize plant introduction work in the country, the Indian Council of Agricultural Research had advised the State Departments of Agriculture, the Agricultural Universities and the Central Institutes under the I.C.A.R. to channelize the exchange of agri-horticultural plant material through the Division of Plant Introduction, IARI which was recognized as the operational wing of the I.C.A.R.

3.3 The plant material of various categories, especially of cereal crops, soybean and millets is presently being brought into the country also by foreign collaborating agencies such as U.S.A.I.D., Rockefeller Foundation,

and Ford Foundation. Under the projects functioning in collaboration with West Germany, Switzerland, Bulgaria etc. a wide variety of seeds and vegetative propagules of vegetables, fruit plants and ornamental bulbs is being imported in fairly large quantities. The foreign agencies (such as USAID) also introduce materials to comply with requests received from Governmental and private institutions in India. Private individuals import certain kinds of plant materials under licenses issued by the Chief Controller of Imports and Exports on the basis of the recommendations made by the Ministry of Agriculture. The material of tea, coffee and rubber is handled by the respective Boards under the Commerce Ministry.

4. EXISTING PLANT QUARANTINE , POST-ENTRY QUARANTINE AND OTHER PHYTOSANITARY PROCEDURES:

4.1 Under the DIP Act, the import of seeds of some plants is prohibited whereas most others can be imported without any restriction and released without any detailed inspection and quarantine treatment. Seeds are now universally recognised as the most imminent source of introduction of pests and pathogens. Mere fumigation and disinfection is not likely to ward off the risk. It should be followed by a detailed laboratory test to which a reference has been made later. For expeditious release of perishable material, the living plants and parts thereof including tubers, bulbs, rhizomes, suckers and cuttings arriving by air and sea, receive quick and routine examination and the commonly accepted phytosanitary treatment at the port of entry before release. The Plant Quarantine Directorate of the Government of India have set up units at the points of entry at important air and sea ports for this type of routine examination and treatment. A note on plant Quarantine in India as administered by the Plant Quarantine Directorate of the Government of India appears as Appendix IV.

4.2 For a detailed post-entry phytosanitary examination of all kinds of plant material, including seeds, the Division of Plant Introduction at

the IARI which is an agency for exchange of agri-horticultural plant material, has a post-entry quarantine and phytosanitary unit consisting of three subunits a) Mycology and Plant Pathology b) Nematology and c) Entomology, located in the respective Divisions of the IARI. The Forest Research Institute, which mainly imports seeds, is responsible for such examinations at its head quarters in Dehradun. The Botanical Survey of India at present does not possess such a facility. The materials imported by private individuals or organisations other than IARI and FRI, however, receive only quick, routine examination and treatment at the point of entry and that too for plant materials other than seeds. None of these authorized organisations have at present facilities of post-entry quarantine propagation houses for observation in case of plant materials suspected of carrying harmful pests or pathogens. There seem to be no predetermined arrangements for follow up action on the inspection of the introduced material in field nurseries and experimental plots spread out over the whole country, even though released after a detailed post-entry laboratory examination. The result is that most of the introduced seed and planting material is grown in India in the main cropping areas without adequate phytosanitary constraints.

4.3 It would thus be observed that Plant Introduction and Plant Quarantine are separate Organizations under separate administrative and technical controls. The latter scrutinise incoming plant materials with the help of the quarantine staff at the points of entry. The former receive the plant material after it has been cleared by the Plant Quarantine and occasionally subject to detailed check and investigations for precluding inadvertent entry of foreign pathogens and pests. The detailed phytosanitary check is only done in the case of the material that is passed on to the Division of Plant Introduction. The staff that carry out detailed check belongs to the Division of Plant Introduction but is placed in the Divisions of Entomology, Nematology and Mycology & Plant Pathology, and works in close collaboration with the Division of Plant Introduction.

5. RECOMMENDATIONS REGARDING PLANT INTRODUCTION AND QUARANTINE WORK

5.1 From the information available from the Plant Quarantine Division of the Directorate of Plant Protection and Quarantine and the Plant Introduction Division of the IARI, it is obvious that new introductions are very much on the increase not only in respect of plants of agricultural value but also of aesthetic importance.

5.2 Due to much better international travelling facilities and for various other reasons, contacts between institutions and individuals with foreign countries have greatly increased and those interested in agriculture or horticulture import or try to import a variety of living plants or propagules.

5.3 During the last decade, considerable information has accummulated on virus diseases of plants and their alternate hosts. It has, therefore, become obvious that even plants of no economic value can carry disastrous diseases which may hamper the agricultural economy of the country.

5.4 Plant Introduction and Plant Quarantine should, therefore, be based on realistic appreciation of the diseases and pests involved in import of all types of plants and for this purpose both the organisations should be equipped with adequate cataloguing facilities of diseases likely to be imported from different countries. This would ensure preparedness well in advance for undertaking suitable treatments for growing plants under isolation. It would be of mutual advantage if the information so collected is exchanged between Plant Quarantine Division of the P.P. Directorate and the Plant Introduction Division. Indiscriminate plant introduction, without adequate phytosanitary safe-guards can have disastrous consequences on the agricultural economy of the country. It is, therefore, necessary to canalize imports through competent agencies limited in number at least for such plants as have vital importance in our agricultural economy. This can best be achieved if the Government of India authorise for this work as few agencies as possible. One single agency, however,

may not be found a workable proposition. Even in the USA and the USSR which have long experience of plant introduction work, single agency system has not been adopted. The procedure of imports through limited agencies would have obvious advantages. It will save duplication of effort, establish more fruitful contacts with foreign organisations and individual scientists, enable maintenance of records centrally and above all provide better control on the concomitant entry of new pests and pathogens as also weed species. The Committee, therefore, recommends that the existing three agencies viz. Division of Plant Introduction, IARI (for agri-horticultural plants); FRI (for plants of forestry importance) and BSI (for plants of general botanical interest) may be officially authorized as sole agencies to introduce plants (for research or for large scale trials) recognised to be of national importance or where special risks of diseases and pests are involved. A list of such plants may be drawn up and notified.

5.5 All plant material is to be channelled through these three agencies primarily for plant quarantine purposes and for avoiding duplication of imports. Elsewhere in the report it has been recommended that each agency that is authorised to receive plant material from abroad should provide certain minimum facilities for detailed check. If any institutions in future come up to the specifications they would also qualify for being linked with the plant introduction agencies. At the moment these three existing agencies be authorised and supported by the Government of India for plant introduction activities, in the areas of their interest. Because of the national research role, they would not be subjected to the generally applicable restrictions of import of plant material. Anyone wanting to import or export plant material for experimental purposes is generally to be assisted by the concerned Plant Introduction Agency in importing or exporting the material. Thus the Plant Introduction Agency is also a Service Agency for the benefit of all States, institutions and parties.

5.6 Two of the above mentioned agencies are well connected internationally and with important places in the country by fastest means of communication and transport. Contacts with other concerned Govt. departments would also be easy in their case. The FRI, though not far from Delhi is not directly connected with outside world. To facilitate its working it should be possible for the Dehra Dun Agency to work out a collaborative arrangement with the I.C.A.R. agency.

5.7 The idea of authorizing only a few agencies is not to create bottlenecks in plant introduction and cause hardships to interested Governmental and other institutions and individuals. In fact this is being recommended in the interest of agricultural economy and to facilitate procurement of plant materials from other countries. The parties concerned can have the freedom to send requests for plant material directly to outside institutions, if they so desired, but the incoming material shall invariably be required to be routed through the authorized agencies for accessioning, post-entry phytosanitary examination and final clearance as well as for the preparation of a National Register of germ plasm available in India.

5.8 The cataloguing of germ plasm collections available in the country is not being systematically attempted, presumably because of inadequacy of staff. In the interest of national and international collaboration, the Plant Introduction Division should publish yearly a catalogue of germ plasm which should be made available to agricultural scientists in India so that they can know the position before making requests. It is also necessary to maintain a National Register of all introductions at a central place like the Division of Plant Introduction at IARI with sub-registers maintained by F.R.I. and B.S.I. These organizations should furnish particulars of their registers annually to the Division of Plant Introduction.

5.9 The permission to import plants is regulated through various agencies. It may come either as postal parcel or as cargo by air or sea or as personal baggage. The Import Trade Control Policy has also prescribed some

restrictions and prohibitions, but this would apply mostly to cases where due to the value of the commodity involved, an import licence is to be obtained. The Committee therefore, recommends that except for agencies authorised to import the plants for introduction purposes, every other party must obtain an import license irrespective of the value of goods involved. This license should be issued in consultation with the Plant Introduction Division for agri-horticultural plants; F.R.I. for forestry species and B.S.I. for plants of general botanical interest and Directorate of Plant Protection, Quarantine & Storage.

5.10 The release of the material will, however, be subject to the usual Plant Quarantine Regulations. If due to certain circumstances, any prohibited plant material has been imported, it should be passed on to the concerned Plant Introduction Agency and it should be discretionary on its part to provide propagules at a later date to the importing party.

5.11 Individuals or technical missions from foreign countries participating in developmental programmes in India do not have to seek such permits but they should be advised not to import plant material through channels for which they enjoy diplomatic immunity. The material should invariably be routed through the Plant Quarantine Directorate at the point of entry and then through the accredited plant introduction agencies.

5.12 The imports of plants is at present permitted through a number of sea and air-ports. It is understandable that modern equipments and facilities including competent scientific staff could not be provided at all these plant quarantine stations. It is, therefore, suggested that a list of plants of national importance should be drawn by the Plant Introduction Division and the imports of these should be permitted only through sea-ports of Calcutta, Bombay, and Madras and air-ports of these towns and at Delhi.

5.13 The experience of past few years of the Post-entry plant Quarantine service of the Division of Plant Introduction at I.A.R.I. is summarized in

Appendixes V to VII. It is confirmed that phytosanitary certificates accompanying importations are not wholly dependable and that detailed post-entry quarantine examination and treatment is necessary. Similar has been the experience of Plant Quarantine Division of the Directorate of Plant Protection and Quarantine. Meticulous care has to be taken in dispersal particularly of live plants and their vegetative propagules. Even in case of seed exchange, there are categories of plant material that can be inspected, treated and released quickly from the point of view of insect infestations but are likely to be detained due to presence of altogether new pathogenic organisms that show up on plating and in growing-on tests (e.g., virulent pathogenic races of Helminthosporium intercepted with wheat introductions). Plant material under the same host genus may be subjected to quick visual checking for one pathogen but may have to be subjected to time-taking plating tests for some other pathogen. It is therefore, essential that all imported plant material is not merely inspected, and treated if necessary, at point and moment of entry into India. It should move through the post-entry quarantine laboratories of the authorised agencies for a detailed post-entry quarantine check. These laboratories will not merely inspect and release materials only if healthy, but will also undertake treatments to cure or disinfest the propagules or parts of propagules such as embryos or meristem tips through tissue culture technique, if the host plant germ plasm is really rare and precious.

PLANT QUARANTINE RESEARCH

5.14 Plant Quarantine for disinfection / disinfestation of materials is sufficiently well-known but newer ideas and chemicals are being introduced from time to time. It should be one of the most important functions of the Plant Quarantine to undertake disinfection/disinfestation treatment to ensure complete destruction of pathogens and pests, without injuring the viability of plant material. There is thus pressing need to develop plant quarantine

research with the above objective and such work can only be undertaken by a well equipped research institution. It is therefore, suggested that such work, together with periodical refresher courses on this topic, should be conducted at IARI by the ICAR plant introduction agency and its post-entry quarantine units.

6. RECOMMENDATION REGARDING DOMESTIC QUARANTINE WORK:

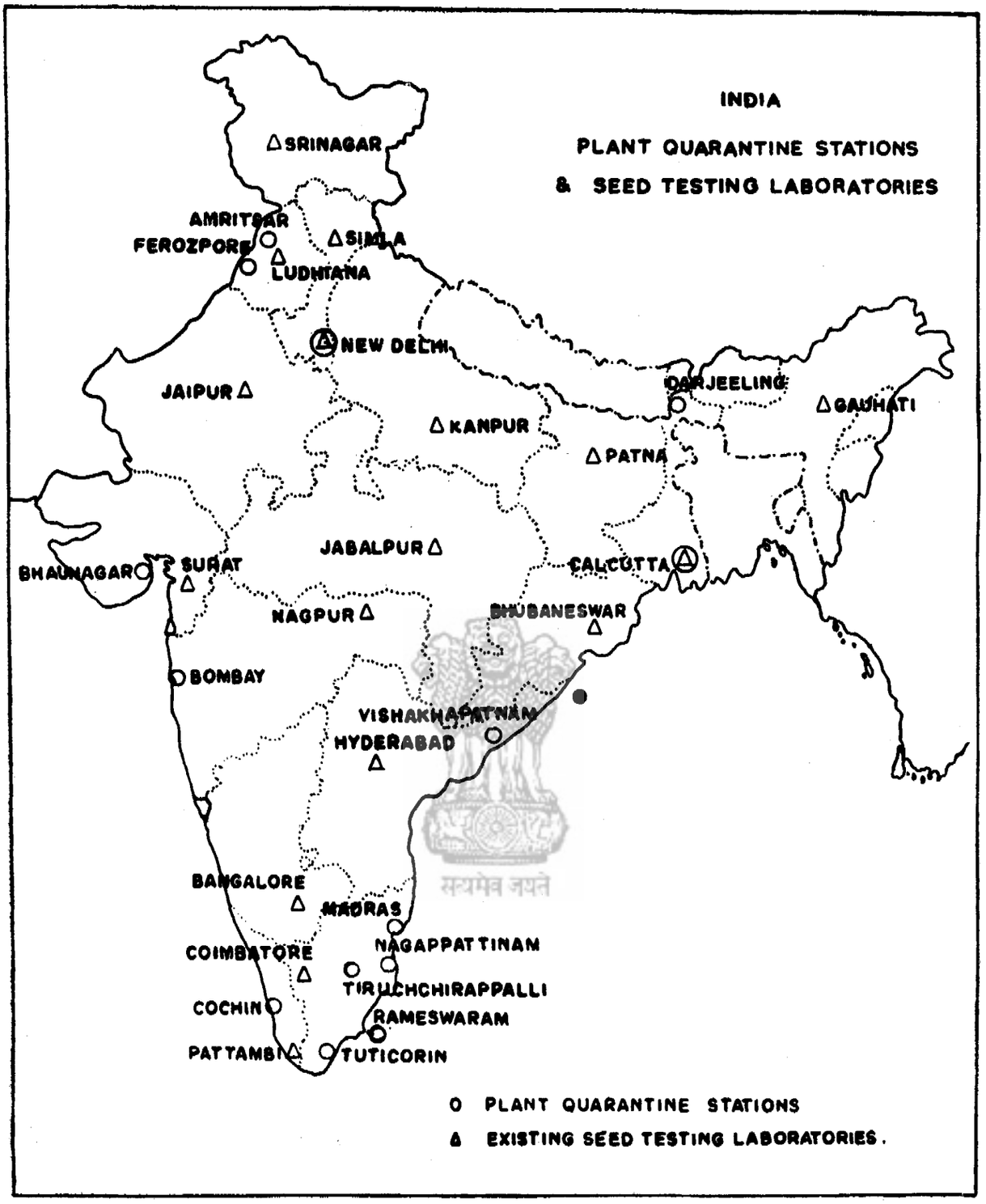
6.1 All bans or restrictions on movement of plant propagating materials and other materials of plant quarantine significance across boundaries of such significance within the country should be imposed with the concurrence of the Central Government advised by the Plant Quarantine Directorate and Plant Introduction Agencies. The latter organisations should keep up-to-date information on distribution of pests and diseases in different parts of India.

6.2 The problem of enforcing quarantine in relation to host-parasite combinations of plants in intra-national movements across boundaries of quarantine significance is the most difficult one to tackle. Some of the recent developments on the administrative and other horizons of the country could be made use of for ensuring domestic quarantine enforcement more effectively.

6.3 Certain specific cases of domestic quarantine importance are:

Potato seed- tuber material booked from Darjeeling to Calcutta within West Bengal by rail is often short-landed at stations en-route which happen to be in Bihar State, although on paper, the material is said to be received at destination. The short-landed material is then illegally labelled as Bihar seed-tuber of potatoes and is re-booked to other places in India where it should not be sent on the grounds of domestic quarantine. Cooperation of the rail authorities in locating such loop-holes should be sought.

6.4 Boundaries of quarantine significance for certain host-parasite combinations such as Cardamom infected by Katte disease; Banana infected by Bunchy Top and onion infected by Smuts and so on should be drawn up and co-


INDIA
PLANT QUARANTINE STATIONS
& SEED TESTING LABORATORIES
SRINAGAR
AMRITSAR
FEROZPORE
SIMLA
LUDHIANA
NEW DELHI
JAIPUR
DARJEELING
GAUHATI
KANPUR
PATNA
JABALPUR
BHAVNAGAR
SURAT
CALCUTTA
NAGPUR
BHUBANESWAR
BOMBAY
VISHAKHAPATNAM
HYDERABAD
BANGALORE
MADRAS
NAGAPPATTINAM
COIMBATORE
TIRUCHCHIRAPPALLI
COCHIN
RAMESWARAM
PATTAMBI
TUTICORIN
PLANT QUARANTINE STATIONS
EXISTING SEED TESTING LABORATORIES.

operation of officials at various levels and of public at large through education using media of mass communication, on either side of such boundaries in checking movement of the material concerned should be elicited. Such a cooperation in an exemplary manner was obtained in the past from the officers of Mysore State with respect to areas cordoned off by them because it was planted to onions that were smutted. The authorities arranged planting of mulberry in the very same areas and thus a breathing time of about 20 years was gained for ensuring extermination of the parasite in the affected areas.

6.5 Mass education through panchayats in respect of domestic quarantine should be taken up at a later date. Television programs relayed via an orbiting satellite should also be used for this purpose whenever the facility commences operating. The possibility of deputing (posting) plant protection scientists/personnel to the existing seed testing laboratories (see map. No. 1) and making their services available for transport of plant host materials across boundaries of quarantine significance in healthy condition under suitable certifications should be explored. The extent to which the existing agri-horticultural societies of the different States can offer help in this regard may also be found out.

6.6. Movement of animals used in lac, silk and honey producing industries may be controlled by the appropriate agencies that control the movement of plant materials.

6.7 Agricultural scientists combining in them, qualifications in the field of law should critically examine the existing laws and the machinery and formulate rules for movement of plant material that falls in the concurrent list of items over which the state and the centre have jurisdiction, according to the prevailing constitution of India.

6.8 All existing provision and facilities should be made use of for enforcing domestic quarantine and no parochial interests should dominate

national interests. The Standing Committee on Plant Introduction and Quarantine proposed to be formed in the end portion of this report should review the situation relating to domestic quarantine periodically and recommend revisions in rules under the DIP Act and suggest newer enforcement procedures from time to time.

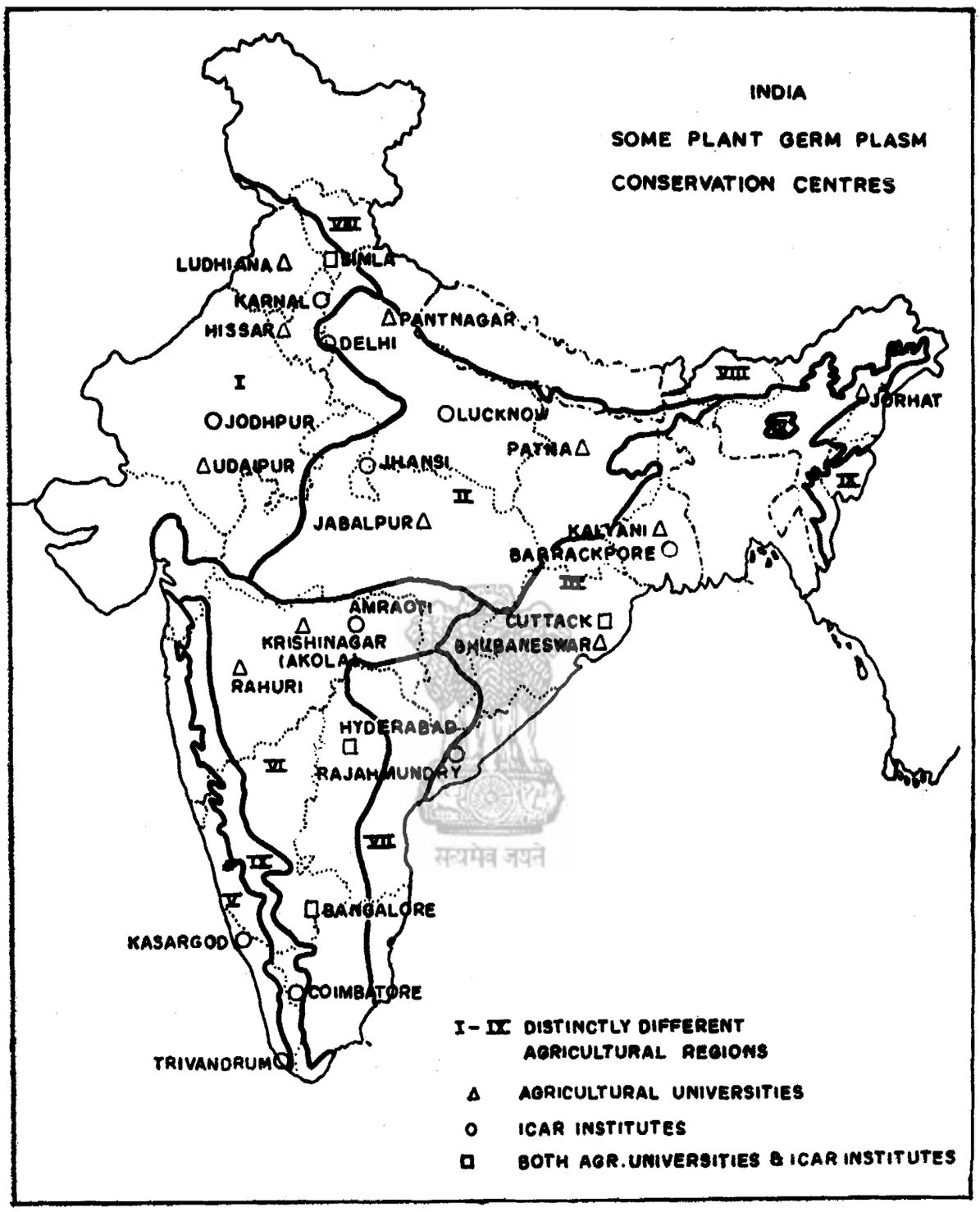
7. STAFF AND PHYSICAL FACILITIES:

7.1 Of the proposed three agencies, only that of ICAR is at present reasonably equipped by way of trained personnel and physical facilities both for introduction and post-entry quarantine work including quarantine research This organisation, however, also requires to be strengthend particularly for physical facilities. Also as the workload increases additional technicians for post-entry quarantine work would have to be provided. The other two agencies require to be considerably strengthened particularly for post-entry quarantine work both in personnel and physical facilities. These organisations should be given a specific time limit, say two or three years, to come up to the required standard such as may be prescribed by Plant Introduction and Quarantine Adivsory Committee after which, in case of non-fulfilment of norms, Govt. of India may consider withdrawing the delegated authority and making suitable amendments.

7.2 In order that Plant Introduction work is streamlined and the quarantine control is reasonably complete in protecting the economic plant wealth of the country, the following recommendations are made regarding provisions to be made both in technical personnel and physical facilities, after taking into consideration the existing provisions with the proposed agencies.

(1) PLANT GERMPLASM CONSERVATION CENTRES:

7.3 Some of the main stations of various Agricultural Universities, the ICAR Institutes and the Stations of the Plant Introduction Service operated by


INDIA
SOME PLANT GERM PLASM
CONSERVATION CENTRES
VII
LUDHIANA
SIMLA
KARNAL
HISSAR
PANTNAGAR
DELHI
I
JODHPUR
LUCKNOW
PATNA
UDAIPUR
JHANSI
II
JABALPUR
KALYANI
BARRACKPORE
III
AMRAOTI
CUTTACK
KRISHINAGAR
(AKOLA)
BHUBANESWAR
RAHURI
HYDERABAD
VI
RAJAHMUNDRY
VIII
IX
V
BANGALORE
KASARGOD
COIMBATORE
TRIVANDRUM
VIII
JORHAT
IX
I-IX DISTINCTLY DIFFERENT
AGRICULTURAL REGIONS
AGRICULTURAL UNIVERSITIES
ICAR INSTITUTES
BOTH AGR.UNIVERSITIES & ICAR INSTITUTES

the ICAR for agri-horticultural plants are shown in map No. 2, together with outlines of the main agricultural regions. Any agricultural Plant Introduction Service for a country is best operated if it is based on agricultural regions. On perusing the map No.2, it will be apparent that the Indian Council of Agricultural Research operated Plant Introduction Agency does not, so far, have stations located in some of the important agri-horticultural regions of Assam, hill regions of the Western Ghats and coastal strip at the foot of the Western Ghats. It would, therefore, be essential to add stations at places like Jorhat in Assam, Kodaikanal in Tamil Nadu, Bangalore in Mysore State and Trombay in Maharashtra, according to a phased programme.

7.4 The ICAR Institutes, the Agricultural Universities and the State Departments of Agriculture between them have a network of stations where plant germ-plasm collected through plant introduction activity is maintained as Live plant collections. In some stations facilities for storing working stocks of such germ-plasm under low temperature and humidity exist. So far, however, at no place is there a facility for very long term storage (one or more decades) of concerned plant germ-plasm in the form of seed under ideal conditions of low temperature and humidity. The Committee has been informed that such a facility is proposed to be set up by the ICAR Plant Introduction Service at Delhi on the Campus of the IARI as a part of its Division of Plant Introduction. In the long run, similar facilities for long term storage of germ-plasm stocks of agri-horticultural plants in the form of propagating materials other than seeds may have to be provided.

7.5 The F.R.I. and B.S.I. have regional centres for maintenance of germ plasm. For long term seed storage these organisations could use the National Seed Storage Laboratory to be set up by the I.C.A.R. at the I.A.R.I.

(2) POST-ENTRY QUARANTINE PLANT PROPAGATION HOUSES:

7.6 Such propagation houses do not exist in India even at the ICAR

Institutes for sugarcane at Coimbatore, for potato in Simla and for tobacco in Rajahmundry, (A.P.). No such houses exist at Delhi Station of the ICAR Plant Introduction Agency or at National Botanical Garden, Lucknow , or even at the Garden of the Bhabha Atomic Research Centre, Trombay. It has been suggested by some scientists that culture under glass would be impossible in some tropical countries and that the necessary insect-proof condition for a quarantine propagation house could be obtained without use of glass. Even so, some improvised glass house structures have been erected for such purposes in East Africa at Muguga (Kenya). It is essential that Post-Entry Quarantine Propagation House facilities are expeditiously arranged at different locations in India before any work on global Plant Introduction and Exploration is intensified for the sake of our country. It is suggested that such houses may be provided at places like Delhi, Simla, Coimbatore, Trombay, Rajahumundry, Dehra Dun and Calcutta. These facilities could even be availed of jointly by the authorised Plant Introduction Agencies. This provision will also make it possible to salvage plant material found infected/infested during post-entry quarantine checking.

(3) PLANT INTRODUCTION AGENCY OF THE I.C.A.R.

7.7 The Division of Plant Introduction dealing with agri-horticultural plants will undoubtedly have the biggest work-load of handling the largest group of economic plants. It should be provided with the following additional staff and facilities.

a) STAFF:

7.8 To efficiently conduct a continuing active plant introduction programme in a large country that India is, it is necessary that the Plant Introduction Division should have a senior research scientist each in the field of agricultural and horticultural crops to determine priorties and most efficiently co-ordinate distribution and evaluation of introductions.

The post-entry quarantine laboratory should be placed under the charge of a Senior Scientist who will co-ordinate and supervize the work of the three sub-units. The work relating to quarantine research should, however, be carried out directly under the supervision of the Heads of Divisions concerned.

7.9 Recommendation has been made in the report for setting up additional germplasm conservation centres and establishment of propagation houses for post-entry quarantine propagation of introduced materials for authorized plant introduction agencies. This can be taken up according to a phased programme and appropriate provision made for staff and physical facilities accordingly.

b) BUILDINGS:

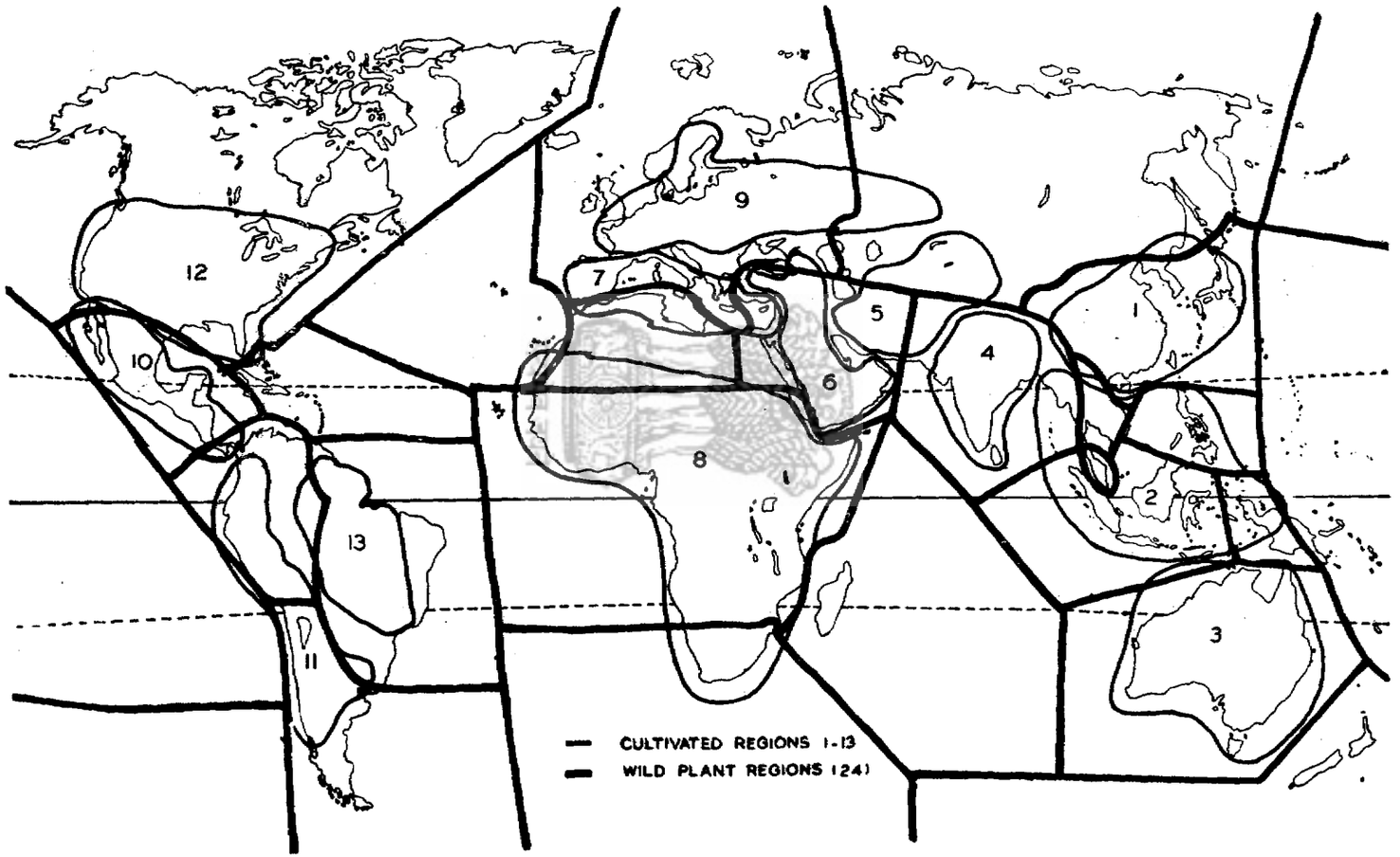
7.10 The Division of Plant Introduction is presently located in a very small building. The construction of another storey over this building to provide additional accommodation has been sanctioned under the Fourth Plan. The Committee feels that even with this additional accommodation it will not be possible to house the post-entry quarantine unit which has its three sub-units isolated in the concerned Divisions of the IARI.

7.11 It is very important that as a first step these sub-units are brought together in one building for a smooth and cohesive working. The Committee has been informed that the Division of Plant Introduction has submitted a fresh proposal for a separate consolidated block for such a laboratory. This proposal should receive top priority for sanction and implementation.

7.12 The Plant Introduction Stations of the Division of Plant Introduction located at Amravati, Jodhpur and Coimbatore have not so far been provided with laboratory accommodation and glass house facilities. This requires looking into for making necessary provision as has been done in the case of the station functioning at Simla.

7.13 The Committee feels that the decision to set up a National Reposi-

CULTIVATED AND WILD PLANT REGIONS OF THE WORLD



tory of germplasm, for long term storage of seeds, is a step in the right direction. Expeditious steps may be taken to implement it.

c) EXPLORATION:

7.14 In view of the fact that the rich germplasm of land races of various agri-horticultural crops which have long been in cultivation in India is fast eroding and may not remain available for preservation for future use of plant scientists, it is suggested that an independent organisation like the Plant Introduction Division should be made responsible also for plant exploration work for the organised collection of such germplasm. For this type of exploration work, whereas required staff has already been sanctioned, the requirements such as exploration van and camping equipment have not been provided. It is hardly necessary to emphasize that without proper facilities of transport, efficient plant exploration work cannot be carried out.

7.15 Once the facilities for the handling of plant Introductions at the receiving end in India are placed on a firm footing, qualitative and quantitative and intensification of Plant Introduction activity on world-wide basis could be taken up. This would be in the best interest of India's plant wealth. The world has been divided by scientists into more or less 24 wild plant regions and 13 cultivated plant regions (map No.3). Extensive and intensive plant introduction activity in the best interest of India could be arranged, if roving Plant Introduction Attaches are posted in some of the important cultivated and wild plant regions. To begin with, these regions could be: (1) South East Asia; (2) Central Asia to Mediterranean, (3) Tropical and subtropical parts of Africa, and (4) Latin America. Building up collections through correspondence alone has its own limitations. Special plant collecting expeditions should be organized from time to time to collect germ plasm of important crops or groups of crops in areas known

to have rich concentration of germplasm. In this respect the Ministry of External Affairs can make a significant contribution.

d) ADMINSTRATIVE CONTROL

7.15 Since the Division of Plant Introduction caters to the needs of all the research institutions on crops, it will be desirable in course of time to place it directly under the I.C.A.R. as a separate agency. The Coordinators of All-India crop improvement projects who are interested in the import of germplasm of their crops are located at various centres and not concentrated at the I.A.R.I. There is need for close liasion between the Plant Introduction Agency (D.P.I.) and the co-ordinators.

(4.) FOREST RESEARCH INSTITUTE AND BOTANICAL SURVEY OF INDIA :

7.17 The Forest Research Institute and Botanical Surveyof India are expected to handle limited plant introduction work as compared to the Division of Plant Introduction. The F.R.I. already has a unit for plant introduction in the Directorate of Forestry Research under the immediate charge of Plant Introduction officer with supporting staff. Since it is proposed that FRI should be the only authorized agency for the import of seeds and plants of forest species, this unit would require to be suitably strengthened in technical personnel. This introduction Unit has limited staff for phytosanitary examination at present. The existing plant quarantine base of the FRI which is conducting the phytosanitary examination of outgoing consignments mostly, would have to be strengthened by way of staff and equipment to handle the phytosanitary examination of the incoming consignments.

7.18 The agency of the Botanical Survey of India would require to be strengthened primarily from post-entry quarantine point of view. Since this organisation will be having limited plant introduction activity, the

possibility of working out an arrangement with the plant quarantine unit of the P.Q. Directorate stationed at Calcutta, with suitable augumentation of its facilities, may be examined.

(5) PLANT QUARANTINE DIVISION OF PLANT PROTECTION DIRECTORATE:

7.19 The main Plant Quarantine Stations at the recommended point of entry viz. Delhi, Bombay, Calcutta and Madras should be manned by Senior Class I Pathologists, Entomologists and Nematologists,. At present these are being manned by scientists of Class II category. The Nematology discipline is not represented at present. Since it is proposed that in future all true seeds should also be subjected to inspection at the points of entry the workload of this Division will increase. Therefore, these senior posts should be in addition to the existing class II scientific posts.

7.20 The additional senior staff should be responsible for the preparation of material for publishing every six months a list of pests and diseases intercepted at various points of entry and in the post-entry quarantine laboratories and field nurseries of the authorized plant introduction agencies. At present the Plant Quarantine Division publishes reports on the interceptions made from time to time, in the periodical entitled "Plant Protection Bulletin."

7.21 These stations should also have proper modern equipments .

(6) VISITS TO FOREIGN COUNTRIES:

7.22 Plant Introduction and Plant Quarantine scientists should have increasing opportunities to visit countries having well organized Plant Introduction and Quarantine Services. So far as plant introduction is concerned, on the spot observation and study, and personal contacts with scientists abroad will greatly benefit the country by enlarging germplasm collection and exchange of information.

8. ROLE OF VARIOUS AGENCIES AND DEPARTMENTS IN PLANT INTRODUCTION AND QUARANTINE

8.1 In the execution of plant introduction and quarantine work, several agencies and departments of the Govt. of India and State Government are associated. In order that the day to day working of plant Introdudtion agencies can be streamlined and carried out smoothly it would be necessary to provide certain facilities and concessions to the agencies. Some of the more important ones are listed below:

(1) The authorised Plant Introduction Agencies may be permitted to exchange plant materials with all countries of the world irrespective of the type of political relations that may exist between them and India, from time to time, particularly because such transactions will be in the best interest of the humanity as a whole and will not affect safety or economy of India;

(2) The Ministry of Finance may permit duty free clearance of all import of Plant material addressed to the Plant Introduction Agencies. A detailed proposal in respect of this recommendation may be sent to the Ministry of Finance (Department of Revenue and Insurance).

(3) The Chief Controller of Imports & Exports may provide to the Plant Introduction Agencies, a blanket license for import and export of plant material concerning the individual agencies, e.g. agri-horticultural plants (D.P.I.IARI) forest species (F.R.I.) other plants (B.S.I.). Since Division of Plant Introduction and F.R.I. already have this blanket permission, this concession will be required for B.S.I. also.

(4) The Reserve Bank may give a standing permission to the Plant Introduction Agencies to pay freight charges on Plant Introduction, to the transport agencies, in Indian currency:

(5) The Indian shipping lines (air or surface) may have some

working arrangements with the Plant Introduction Agencies to receive payments of all dues in respect of freight on production of bill and not in ready cash.

(6) The Ministry of External Affairs have agreed to direct all Indian Missions abroad (wherever they exist), that payments in foreign currency may be made expeditiously by them on behalf of the Plant Introduction Agencies towards cost and incidentals of their imports. For this purpose, however, the Ministry of Agriculture has to issue a formal standing sanction, with the concurrence of the Ministry of Finance for payments to be made on account of incidentals for plant material, etc., by the Indian Missions, in respect of imports of or arranged by the Division of Plant Introduction under the ICAR and F.R.I. Similar sanction has to be issued by the Ministry of Education for imports of or arranged by B.S.I. On the basis of such sanctions, A.G.C.R. may be asked to issue authority in favour of the missions concerned. The precise head of account to which the expenditure is debitable in the case of each import made for or on behalf of actual indentor belonging to Central or State Government, is also required to be communicated to the Indian Mission concerned by the appropriate plant introduction agency. In the case of imports made for or on behalf of indentors other than those belonging to the Central or State Government, the AGCR may be asked to realise the amount in question in cash in India from the plant introduction agency concerned, which in turn shall recover the amount from the actual indentor without prejudice to budgetary provisions of the agency.

(7) The consignment of Plant material meant for the authorized agencies would be received either through commercial airlines or by air/surface mail reaching Foreign Post Offices at the point of entry. Some of the consignments would be of perishable plant material requiring urgent handling for clearance.

8.2 In order that such consignments can be sorted out for clearance expeditiously, it is suggested that the agencies may be supplied with the orange-yellow tag by the Plant Quarantine Directorate. The use of the tags

Continued...22.

should facilitate sorting out of consignments at the foreign post offices. It is realized that use of the tags would involve use of covers for mailing to the suppliers which would be expensive. It would be preferable if some internationally accepted convention were to exist to indicate existence of perishable plant material (including seeds) in consignments. Even as it is, the agencies could as well indicate to the suppliers to put a bold red cross within a red circle on all their parcels which would obviate the necessity of sending tags in covers. With any of these provisions a system can be worked out with Postal authorities.

8.3 At present the representative of the Plant Quarantine Directorate attends the Foreign Post Office twice a week to release plant consignments after quarantine check. The perishable plant material would need immediate release on arrival. It is, therefore, recommended that a whole time representative of the Plant Quarantine Directorate be posted at the Foreign post offices at Delhi, Bombay, Calcutta and Madras. Since meximum activity in plant introduction relates to agri-horticultural material, for which the central agency is located in Delhi, it is recommended that urgent action may be taken for this provision at Foreign Post Office at Delhi.

8.4 The consignment should be opened first in quarantine laboratory in the presence of the Customs official, if necessary, Opening these packages outside the laboratories would defeat the very purpose of quarantine check.

9. EXPORT OF PLANT PROPAGATING MATERIAL TO FOREIGN COUNTRIES

9.1 In plant introduction work there is always a two way traffic. When it is appreciated that availability of extensive germplasm is the basic need of the plant breeder, it is implied that there has to be a free exchange of germplasm between countries which are in a position to exhhange .

9.2 However, in actual practice it is the common experience of plant introduction agencies in various countries that there exist regulations in

different countries prohibiting or regulating the export of plant propagating materials. This is possibly more from the point of view of economic and biological conservation considerations rather than political. In some cases it is the crop as such and in other cases it is certain genotypes of a crop which come under this category. Sometimes the breeders have their own reservations regarding the supply of materials which are in the assembly lines. There are well known examples which are, however, not enumerated here. It is clear that such restrictions or prohibitions apply to a very limited category of plant materials.

9.3 Since such a practice, if followed by India would not be exclusive to India, it is recommended that export of plant propagating material of the plants of key importance to Indian economy may be banned and that of plants likely to get extinct may be restricted. A carefully considered list of such materials may be finalized jointly by I.C.A.R., F.R.I. and B.S.I. Such a list should be made available to the Indian Missions for supplying copies to visitors coming to India.

9.4 It is advantageous if complete inventories of all suppliers of plant propagating material to foreign indentors are available with authorized plant introduction agencies. This information would be useful in procuring on exchange basis similar plant material (not necessarily in the same genera-categories) from abroad for use in India. It could also be useful in economising on expenditure on supplies of the same material to the same country in the same season or year from one or more sources in India. It is, therefore, suggested that export of all such material unaccompanied by a ' No Objection Certificate' from the concerned Plant Introduction Agency should be prohibited. This will ensure that exporters will give to the Agency concerned complete details of what they intend to supply to foreign indentors.

9.5 This certificate should be furnished on the obverse of the phytosa-

nitary certificate. (s) accompanying the consignments of Plant propagating material to be exported.

9.10 A specimen copy of the phytosanitary certificate dealt with such a certificate on its obverse is attached (Appendix VIII).

9.11 The above certificate is closely followed by a ' Plant Inspection Certificate' issued by any one of the scientific institutions recognised by the Govt. of India (e.g., the ICAR institutes, Agricultural Universities, Forest Research Institute etc.) to the effect that the contents do not include propagating material (or material usable for such a purpose) of plants coming under the banned category for exports.

9.12 The plant introduction agency could issue all the 3 certificates. Additional certifying agencies for ' Phytosanitary Certificate' and 'Plant Inspection Certificate' may be notified by the Government of India as accredited agencies.

9.13 In the procedure suggested in the foregoing account, export of Plant propagating material need not always be routed through the Central Agencies of Plant Introduction and yet all such supplies are effected with their prior knowledge and consent. Such a decentralisation would be of advantage in (1) distribution of work load of export of this kind over more than one institution and (2) ensuring expeditious export of perishable living plant material like that of sugarcane and potato, for which specific ICAR institutes exist with competent botanists and plant quarantine scientists on their staff. Even supplies of seeds with low viability, such as those of citrus and mango or of propagules in bulk quantities (of necessity through slower means of transport by surface routes such as sea, rail or road) are likely to get delayed unduly if their supply is centralised through a single agency. All this can be avoided by providing for a multipoint supply facility.

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10. ROLE OF INDIAN MISSIONS ABROAD

10.1 Earlier in the report it has been recommended that the Indian Missions should provide facilities to the Plant Introduction agencies for making payments on their behalf.

10.2 The Indian Missions should make available to all persons seeking travel visa a copy of the plant collection and quarantine regulations of India. This publicity material should be prepared jointly by the Plant Quarantine Division and authorized Plant Introduction agencies.

10.3 The Indian Missions should extend all facilities to the explorers of the Plant Introduction agencies and the scientific personnel visiting abroad.

11. REVISION OF RULES UNDER THE DIP ACT 1914 AND TIMELY UPDATING OF PROVISIONS RELATING TO PLANT MATERIAL PUBLISHED IN CUSTOMS ACT, CUSTOMS MANUAL, POST OFFICE GUIDE, IMPORT TRADE CONTROL POLICY, AND EXPORT TRADE CONTROL POLICY

11.1. The D.I.P. Act (1914) as amended from time to time, lists plants the import of which is either prohibited or regulated. It is recommended that a careful scrutiny may be made of the existing lists in the light of the latest scientific information available on the subject. This scrutiny can be made by a Committee consisting of Plant Protection Adviser to Govt. of India, A.D.G. (Plant Protection) ICAR, and Heads of the Divisions of Mycology and Pathology, Entomology, and Nematology of the I.A.R.I. and Forest Pathologist and Entomologist of the F.R.I.

11.2 There are several other changes which will have to be incorporated in the revised rules under the DIP Act considering the recommendations made by the Committee with regard to agencies authorized for plant introduction, import of plant material by private individuals or organizations and other related aspects. Simultaneous changes will also have to be made in the Customs Manual, Import Export Trade Control Policy and Post Office Guide.

11.3 It is therefore recommended that the matter of incorporating suitably plant introduction and protection regulations in the Customs Manual, Import and Export Trade Control Policies and Postal Guide may be examined carefully by a Committee consisting of representatives of Central Board of Excise and Customs, Directorate of Plant Protection, Quarantine and Storage , Director General of Posts and Telegraph, Ministry of Foreign Trade, the Plant Introduction agencies and the Indian Council of Agricultural Research.

12. STANDING ADVISORY COMMITTEE FOR PLANT INTRODUCTION AND QUARANTINE

12.1 The Committee recommends the establishment of a standing Plant Introduction cum Quarantine Advisory Committee on which the I.C.A.R., F.R.I., B.S.I., and Directorate of Plant Protection and Quarantine will be members and others with expert knowledge of the subject/crops/plant products could be co-opted.

12.2 This Committee can meet as and when special need arises to discuss important policy matters relating to Plant Introduction and Quarantine including domestic quarantine.

12.3 This Committee will also make recommendations from time to time regarding the revision of rules under the PIP Act and necessary incorporations in the Customs Manual, Import and Export Trade Control Policies and Postal Guide by co-opting representatives of the concerned Ministries and scientists of the appropriate Institutions.

P A R T II

ANIMAL INTRODUCTION AND QUARANTINE

13. NECESSITY OF ANIMAL INTRODUCTION IN LIVESTOCK INDUSTRY AND EXISTING ANIMAL INTRODUCTION PROCEDURES

13.1 Livestock population of India, inclusive of poultry stood at 458.97 million, according to the 1966 census. The performance of Indian livestock is poor as compared to that of improved breeds in advanced countries. Import of livestock from abroad, for a long time to come, would be essential in order to improve productivity of existing livestock in India. Such importations, at present are somewhat of a low order and yet in 1967-68, the country imported Rs. 13.63 crores worth of livestock and livestock products.

13.2 The pace of research on livestock improvement in certain countries has been exceedingly fast. To keep abreast of advancements, it is absolutely necessary that our scientists import livestock germ plasm and use it to improve the efficiency of indigenous livestock. In the case of poultry alone, some of the foreign countries have exploited the technique of hybridisation to such an extent that hybrid chicks possessing a very high meat productivity have now been made available. With the import of parental stock of such a highly productive poultry, it might be feasible to produce market chicks within India and thus save substantial amounts of foreign exchange which the Indian collaborators are currently paying to foreigners as royalty and as their share. The production efficiency of other livestock also has been tremendously improved by the foreign countries. Milk yield of Holstein cows of USA, UK and Australia is at least 10 times more than that of our average Indian cow. Similarly, improved breeds of pigs of other countries have a high feed conversion ratio and litter size, which makes for greater profits in pig producing industry. To effect improvement in our livestock by selection alone is a time consuming process. Our present policy envisages cross breeding the very much improved and pure imported stock with the improved breeds in our country. This would entail continued importation of exotic livestock in the immediate and distant future.

13.3 Considerable advance has also been made in foreign countries towards disease control in livestock through evolution of new techniques. To deal with the disease problems in our own country, it will be imperative for our laboratories to obtain some of the foreign biological material. Traffic in these biological materials will also increase considerably and it would be necessary to regulate importation of pathogens not prevalent in our country.

13.4 In respect of certain species of livestock an all- India breeding policy has been evolved by the Government of India. Breeding policy for cattle, sheep, pigs, and poultry, inter-alia, envisages cross breeding with well known and established exotic breeds which are imported from UK, USA, Australia and other countries by the Government of India and the State Governments. Frozen semen of cattle and fertile eggs of poultry are also imported in small quantities. Import applications of private breeders for poultry are considered on the recommendations of the State Governments. Proposals for further introduction of relatively new kinds of poultry such as Turkeys are also under consideration.

13.5 All proposals for import of livestock are considered by the Animal Husbandry Commissioner to the Government of India who decides on the merit of each case and recommends issue of Import Licence or Customs Clearance Permit (CCP) by the Chief Controller of Imports and Exports.

13.6 Pathogens for research work and production of sera and vaccines are also imported on the recommendations of the Animal Husbandry Commissioner.

13.7 Import of livestock for breeding purposes is permitted duty-free entry vide Government of India, Ministry of Finance, Customs notification No. 64/F.No. 5/131/68-Cus I dated the 26th Feb., 1969 published in part II, sub-section (I) of the Gazette of India Extra Ordinary dated the 26th Feb. 1969.

14. ROLE OF ANIMAL QUARANTINE IN LIVESTOCK INDUSTRY

14.1 Indian livestock is subject to the ravages of a number of infectious and contagious diseases. These include rinderpest, foot and mouth disease, and Ranikhet disease which are highly endemic to our country.

14.2 There are a number of other diseases prevalent in regions outside India. Examples are: For cattle: bovine malignant catarrhal fever, vesicular stomatitis, lumpy skin disease, bovine encephalomyelitis, heart water, and STA 1, STA 2 and STA 3 types of foot and mouth disease virus; For horses: equine encephalomyelitis, equine infectious anaemia and vesicular stomatitis. For sheep: scrapie, louping ill and blue tongue. For pigs: African swine fever, vesicular exanthima, transmissible gastro enteritis and Teschen disease. For poultry: fowl plague. These are only a few among the several bacterial, viral, fungal, protozoal and parasitic infections. Such diseases must be kept out of the country by taking adequate precautionary measures.

14.3 In the past, lack of facilities for taking precautions has resulted in serious losses. India was free from African Horse sickeness till 1960: entry of this disease in April 1960 resulted in heavy loss of equine population. In monetary terms, the estimated loss was of the order of Rs. 1.28 crores. As many as 31,211 animals were affected by this disease most of which either succumbed to the infection or had to be destroyed. Adoption of stringent measures for 3 years, coupled with vaccinaction resulted in near elimination of the disease by 1968.

14.4 Similarly, swine fever was first recorded in India in 1962. Since then it has spread to a number of States in the Country. Even now, stray outbreaks of the disease are being recorded. Incalculable harm has been done to the poultry industry by the introduction of diseases like avian leucosis complex, chronic respiratory disease, infectious bronchitis, infectious laryngotrachetis, pullorum disease, etc.

14.5 Entry of exotic diseases of the type cited in the foregoing account, was primarily due to lack of proper quarantine measures at the ports of entry

into our country. Even greater traffic in livestock and livestock products is anticipated hereafter owing to operation of several development projects. Unless adequate steps are taken to keep a watch, a number of diseases, which are not prevalent in the country may sneak into India resulting in very heavy loss to our animal industry.

(a) RECOMMENDATIONS OF AN INTERNATIONAL ORGANISATION:

14.6 The Office International Des Epizooties in their draft on International Zoo Sanitary Regulations has prescribed that the States and their Veterinary Adminstrators shall by all possible means take necessary action to ensure that the frontier posts and the quarantine stations in their territory shall be backed by competently staffed organisation and provided with efficient facilities for the enforcement and execution of all quarantine measures provided for in their draft Regulations. Each frontier post and each quarantine station shall be provided with facilities for isolation, feeding, watering, etc. of the animals. Each international airport shall be provided with equipment for the disinfection, disinsectisation, sterilization or incineration of swill or any other material dangerous to animal health.

(b) SOME NATIONAL ORGANISATIONS :

14.7 In all advanced countries there are well organised Animal Quarantine and Certification Services directly administered by the Federal/ Central Government. In the USA, there are 28 quarantine stations administered by the United States Department of Agriculture employing 58 qualified vaterinarians and 112 lay inspectors. Their annual budget is around 2,000,000 dollars. In Japan, there are 13 stations (9 at seaports and 4 at airports) adminstered by the Bureau of Animal Industry of the Ministry of Agriculture and Forestry. There are a large number of veterinarians employed at each of these stations.

15. EXISTING ANIMAL QUARANTINE AND POST-ENTRY QUARANTINE PROCEDURES

15.1 The import of livestock into India by air, sea or land is regulated under the provisions of the Livestock Importation Act, 1898 (Appendix No. IX) It is a Central Act and extends to the whole country. It empowers the Central Government to regulate, restrict or prohibit in such a manner and to such an extent as it may consider fit, the import into the country or any specified place therein of any livestock which may be liable to be affected by infectious or contagious diseases; or fodder, dung, stable-litter, clothing, harness or fittings pertaining to such livestock, or that may have been in contact therewith. Though these imports are regulated under the Central Act mentioned above; the Rules for the detention, inspection, disinfection or destruction of imported livestock and fodder, dung, stable-litter, clothing, harness or fittings pertaining to imported livestock (or that may have been in contact therewith) and for regulating the powers and duties of the officers who may be appointed in this behalf, are framed by the State Governments concerned.

(a) PRESENT SET-UP :

15.2 At present, import of livestock into India by sea is permitted only through the ports of Bombay, Madras, Calcutta and Cochin. Imports by air are permitted through the airports of Delhi, Madras, Calcutta, Cochin and Tiruchirapalli. Imports of animals from the adjoining countries through the land routes is prohibited, except through Attari on (Indo-West Pakistan) border.

15.3 At every point of entry the Officers of the Customs Department have powers to deal with all articles and the concerned transports carrying them, the importation of which is regulated, restricted or prohibited by relevant rules and Laws. The list of such articles includes livestock and transports used for their movement.

15.4 The rules pertaining to importation of livestock require that their shipments should be accompanied by two health certificates. At the airports, the Customs authorities are assisted in examination of the imported livestock and checking of the health certificates by an Officer of the State Department of Animal Husbandry, appointed for the purpose under the rules framed under the Livestock Importation Act by the State Government concerned. The under mentioned officers are responsible for checking health certificates at the various ports of entry:

Madras Tiruchirapalli	)	Director of Animal Husbandry,) (Tamil Nadu), Madras.
Calcutta	:	Director of Veterinary Services, (West Bengal), Calcutta or his representative.
Bombay	:	Principal, Bombay Veterinary College, Parel, Bombay, Maharashtra or his representative.
Cochin	:	The Principal, Veterinary College, Trichur, Kerala, or his representative.
New Delhi	:	The Deputy Director, Animal Husbandry Department, Delhi Adminstration, Delhi, or his representative.
Attari	:	The Director of Animal Husbandry, (Punjab), Chandigarh, or his representative.

15.5 In the Central Government, the Ministry of Agriculture, (Department of Agriculture) handle all matters pertaining to the importation of livestock in the country.

15.6 Any person desirous of importing livestock (horses, camels, sheep, mules, asses, bulls, bullocks, buffaloes, goats, swine, poultry, parrots, pigeons and dogs) has to obtain prior approval of the Government of India. A dog accompanying the owner, is, however, permitted to be brought into the country as personal baggage.

(b) ANIMAL HEALTH CERTIFICATES:

15.7 The various State Governments have framed rules under the Livestock Importation Act to regulate importation of livestock. These rules are more or less uniform as they have been drawn up in the light of the model rules framed by the Central Government. According to these rules, livestock imported into this country have to be accompanied by the following health certificates:

(i) A certificate to the effect that livestock (other than poultry) in transit was examined within 30 days prior to its embarkation and was found to be free from all signs and symptoms of diseases as mentioned in Schedule II of the Act.

(ii) In the case of poultry, the certificate should state that the flocks, from which the consignment of poultry is drawn, have been free from the diseases listed at E1 to E6 and E8 to E13 in Schedule II for a period of at least three months prior to embarkation and in respect of diseases listed at E 7 the flocks from which the consignment of poultry is drawn, have been free from the disease for a period of at least one year prior to embarkation.

(iii) In the case of poultry, the certificate should also state that the adult poultry birds, which are either themselves being exported or from which day-old chicks or immature chicken are included in the consignment, were subjected to the tests specified in Schedule III with negative results immediately prior to embarkation.

(iv) In the case of poultry, yet another certificate relating to Avian Leucosis Complex is required. This should state that the flocks from which the consignment of pultry is drawn have been regularly inspected by a Government Veterinary Officer over a period of not less than three months and that day-old chicks

contained in the consignment have not been in contact with any adult birds.

15.8 The certificates prescribed for poultry under the Rules are required to include additional declaration that the chicks were:

(i) hatched in an incubator in which no eggs from infected birds had been hatched and that the incubator was properly fumigated and disinfected prior to hatching; and

(ii) packed direct from the incubator into new boxes for export and that there was no contact with any birds other than-old chicks.

15.9 The imported birds are required to be kept for a period of at least 21 days and the imported baby chicks for a period of 56 days on the importer's premises.

15.10 Further, dogs and cats originating from countries where rabies infection is known to exist are required to be accompanied by another certificate containing the record of the date of vaccination, the vaccine used, the brew number of the vaccine and the name of the production laboratory stating that the dog/cat was vaccinated against rabies more than one month but within 12 months prior to actual embarkation, with nervous tissue vaccine, or within 36 months prior to actual embarkation with chicken embryo vaccine of satisfactory potency.

15.11 As regards export of livestock, certificates are granted by Government Veterinary Officers in accordance with the requirements of the importing countries.

(c) DETENTION IN QUARANTINE :

15.12 The Veterinary Officer is empowered to order the detention in quarantine, of any imported livestock which is not accompanied by a valid certificate or in cases where an outbreak of infectious or contagious disorder or any death has occurred among the livestock on board the vessel/air-

craft/vehicle/train during passage to India. The duration of quarantine may, at the discretion of the Veterinary Officer, extend to a period not exceeding 90 days.

(d) PAYMENT OF CHARGES :

15.13 The importer has to bear all expenses in connection with the landing from the vessel/aircraft/vehicle/train and removal to quarantine of any livestock including the payment of customs duties and port dues and all expenses in regard to feeding of livestock in quarantine.

(e) LIVESTOCK PRODUCTS :

15.14 No separate Act has been enacted relating to the import of livestock products. The import of such products is, however, regulated in respect of certain items under the provisions of the Prevention of Food Adulteration Act, 1954, and the rules framed thereunder. In addition, it is regulated by the rules framed from time to time under the Government of India Import Trade Control Policy, statutory backing for which is provided by the Imports and Exports (Control) Act, 1947.

15.15 According to the provisions of the Prevention of Food Adulteration Act, 1954, no person can import into India:

1) any adulterated food;
2) any misbranded food;
3) any article of food for the import of which a licence is prescribed except in accordance with the conditions of the licence; and
4) any article of food in contravention of any other provisions of this Act or any rule thereunder.

15.16 The provisions of the Sea Customs Act, 1878, apply in respect of articles of food, the import of which is prohibited under section 5 of the

Prevention of Food Adulteration Act, 1954.

15.17 No rules have been framed in regard to import of other products of animal origin like wool, hair, skins etc.

15.18 The export of products of animal origin is regulated according to the export policy formulated by the Ministry of International Trade and Supply, Government of India, statutory backing for which is provided by the Imports and Exports (Control) Act, 1947. In so far as sanitary regulations are concerned, certificates requested by the importing country are issued by the Director of Animal Husbandry concerned, or his representative.

(f) PROPOSALS UNDER THE FOURTH FIVE YEAR PLAN :

15.19 Proposals for setting up a Central Organisation for Animal Quarantine Service costing Rs. 21.73 lakhs has been sanctioned for implementation in the Fourth Five Year Plan. It will be administered from the headquarters by the Central Government. Under this scheme, import and export of livestock and products of livestock origin, will be regulated through the specified ports. Strict examination from veterinary health point of view will be undertaken and tests for quarantine, vaccination of livestock and disinfection of the products will be carried out. Livestock Importation Act and the Livestock (Import) Quarantine Rules have been suitably revised.

15.20 Baggage examination of the passengers at the port of entry will be undertaken and foreign mail packages examined in collaboration with the postal and customs authorities for pets and livestock products brought by passengers as baggage or meat delicacies and other prohibited meat sent by post.

15.21 Thorough examination of the ship-stores on board the ship will be undertaken and special precautions will be taken to see to the proper disposal of garbage on ship.

16. CERTIFICATION SERVICE IN INDIA

16.1 There is neither any statutory regulation nor any central agency to regulate export of livestock and livestock products to other countries. The Agricultural Marketing,Advisor, however, has staff to inspect and certify consignments of some of the livestock products such as wool and animal casings in respect of their quality and gradation prior to export. The exporters get health certificates to cover the consignments from private practising veterinarians or the State Veterinarians. The States have nominated Directors, Dy. Directors, Principals of Veterinary Colleges or even the District Animal Husbandry Officers to issue such health certificates. This system is far from satisfactory as most of the officers nominated by States do not have adequate staff and suitable laboratory facilities to undertake requisite tests. This in the past has resulted in the export of infected consignments of livestock products and strong complaints were received from the foreign importers.

16.2 Lack of proper and internationally accepted certification service for livestock and livestock products has kept down export. The study Group (Export Section) on Agricultural Commodities and Agriculture based Industries in respect of meat and its by-products observed that the biggest handicap in promoting our export trade has been the lack of proper certification service in the country. Japan for example is interested in casings, but does not buy more because the quality is not certified. It is due to want of these certificates that the country is not in a position to export her livestock products to many countries like USA, UK, Hongkong, etc.

16.3 To remove this lacuna and with a view to giving a fillip to the export trade in livestock and livestock products, the Government Of India have included a scheme in the 4th Five Year Plan to establish Animal Quarantine and Certification Service in India.

17. RECOMMENDATIONS REGARDING ANIMAL INTRODUCTION, CERTIFICATION, QUARANTINE AND POST-ENTRY QUARANTINE

17.1 The scheme for the establishment of Animal Quarantine and Certifica-

tion Service, as included in the Fourth Five Year Plan should be speedily implemented. For this immediate location and acquisition of sites at Bombay Madras, Calcutta and Delhi is suggested. It would be necessary to acquire adequate land for establishing quarantine stations keeping in view the number of animals likely to be imported. There should also be facilities for preliminary diagnosis of important exotic diseases. Available resources at the Universities and Indian Veterinary Research Institute (Izatnagar, U.P.) will also have to be mobilised.

17.2 Livestock Imporation Act does not provide for control on the importation of animal products. A separate Act will have to be formulated for this purpose.

17.3 The Authority to implement the Livestock Importation Act should vest with the Government of India and not the State Government as hitherto provided in the Act (Clause 4.1).

17.4 With a view to containing the contagion within the country from infected areas to healthy areas, steps might be initiated to frame suitable legislation for controlling inter-State (domestic) movement of livestock.

17.5 With regard to the importation of sera and vaccines which were not already covered under the Livestock Importation Act, it was felt that it may not be possible to include these in the Livestock Importation Act and Livestock (Import) Quarantine Rules as were in force. It was, therefore, necessary that new regulations should be drafted to regulate importation of such materials.

17.6 Considering the various issues involved, the Committee recommends that all import of livestock might be channelled through the Animal Husbandry Commissioner in the Department of Agriculture, Government of India.

India. So far as the importation of virulent material for experimental purposes was concerned, the Committee suggested that appropriate authorities might be moved to authorise the Animal Husbandry Commissioner with the Government of India, Ministry of Agriculture to issue all such permits required by the research and teaching institutions or other Government or private agencies.

17.7 Institutions in India, having adequate equipment, trained staff and other facilities to carry out laboratory tests of animals detained in quarantine may be accorded recognition by the Government of India so that their reports are acceptable from legal point of view.

17.8 Diagonstic investigation and treatment facilities might be developed for working on exotic diseases for freeing valuable animals of exotic diseases which are prevalent in the country of origin. For this purpose the Committee recommends establishment of a specialised laboratory on the main land (in isolation) or on some off-shore island.

17.9 Indian scientists connected with livestock introduction work may be provided with facilities to visit other countries where germplasm might be available, with a view not only to assess the quantity or quality of animals that would be available but also to study the health and management conditions prevalent in such areas.

18. STAFF AND PHYSICAL FACILITIES :

18.1 Adequate and trained staff is absolutely necessary for successful functioning of the project.

(a) ANIMAL QUARANTINE STATIONS :

18.2 In the scheme for the establishment of Animal Quarantine Stations, a class II Officer is provided to man the project. Since the incharge of a station has to be exclusively responsible for health and upkeep of the stock in station and has to discharge other responsible duties at the Air Port/Sea

Port and issue internationally acceptable health certificate, should be at least a class I Gazzetted Officer.

18.3 The Quarantine Stations should have suitable buildings, stables, laboratories, etc. To accomodate all these facilities, office buildings and residential quarters, sufficient land should be provided.

(b) ANIMAL CERTIFICATION CENTRES :

18.4 Certification service should be set up along with the quarantine stations to obviate the necessity of duplicating the Senior staff. This will create a new export promotion Service without additional cost. It would have adequate and effective arrangements within the premises for fumigation, steaming and disinfection of the products. A combined and well equipped laboratory should serve both the quarantine and the certification service at each station.

19. REVISION OF THE LIVESTOCK IMPORTATION ACT AND THE LIVESTOCK (IMPORT) QUARANTINE RULES

19.1 Livestock Importation Act of 1898 as amended in 1953 empowers the State Governments vide clause 4(1) to frame rules. Since the subject of Animal Quarantine and Certificates is exclusive responsibility of the Central Government and falls under the Central List of Subjects of the Constitution of India, it is necessary that the existing Act and the rules are suitably amended so that the Government of India can implement the Scheme directly. The Livestock Importation Act has therefore, been suitably amended and a revised " Central Livestock (Import) Quarantine Rules" have been drafted. These are appended (Appendix No. X).

20. NECESSITY FOR HAVING STATUTORY REGULATIONS FOR THE EXPORT OF LIVESTOCK AND LIVESTOCK PRODUCTS

20.1 In the international trade and movement of livestock from one country

to the other, it is incumbent that the livestock is really healthy and is accompanied by health certificates granted by dependable agencies before these are permitted entry or exit. This is equally true for the exchange of livestock products like hair, wool, animal casings, horns, hooves etc. There are no statutory regulations in India through which export of livestock and livestock products could be regulated. At present the exporters are securing these certificates from private practising veterinarians or the veterinarians in the service of the State Governments. Many countries do not accept these certificates, with the result that the commodities cannot be exported to those countries.

20.2 To enable the Government of India to regulate export of livestock and livestock products, it is necessary that statutory regulations are enforced. Draft livestock Exportation Bill is appended (Appendix No. XI).

21. STANDING ADVISORY COMMITTEE ON ANIMAL INTRODUCTION AND QUARANTINE

21.1 To keep the health regulations for the import of livestock and livestock products up-to-date it would be necessary that a Standing Advisory Committee is formed. The Animal Husbandry Commissioner with Government of India should be its Chairman; the Director, Indian Veterinary Research Institute (Izatnagar) a member together with three other scientists also as members; and the Deputy Commissioner (LH) in the Department of Agriculture, (Government of India) as the Member-Secretary. This Committee will meet at least once in two years and review the existing regulations vis-a-vis animal disease position in other countries and advise the Government of India. in making suitable revisions in the rules wherever necessary.

SUMMARY OF THE REPORT OF THE NATIONAL HIGH LEVEL SCIENTIFIC COMMITTEE FOR PLANT AND ANIMAL INTRODUCTION AND QUARANTINE

22. SUMMARY AND CONCLUSIONS

22.1 Plant introduction has played and shall continue to play a pivotal role in development of agricultural, horticultural and sylvi-cultural plant resources of any country (1.1 to 1.3). Phytosanitary considerations should be a pre-condition to the dispersal of any plant material involved in plant introduction activity (2.1 to 2.4). In India today, such dispersal of plant material is being carried out by many private, Governmental and foreign technical aid agencies including three plant introduction agencies accredited by the Government of India to carry out this work scientifically. Only two of the officially authorised agencies have some facilities to carry out their functions under relatively high standard of phytosanitary conditions (3.1 to 3.3, 4.2, 4.3).

22.2 The present Plant Quarantine Organisation of the Government of India is under adminstrative and technical control separate from that of the offcial plant introduction agencies. This plant Quarantine Directorate ensures that imports of plant material by any agency are regulated according to updated regulations made under the Destructive Insect Pest (DIP)Act of 1914. This involves issue of permits to prospective importers (often excluding the three official plant introduction agencies); inspection and treatment of certain categories of plant material imported through authorised air/sea/land ports of entry; and follow-up post-entry quarantine check by arrangement with plant protection experts available in the interior for some types of plant introductions (4.1, 4.3).

22.3 Plant Introduction and Plant Quarantine Organisations and their operations in India should be based on realistic appreciation of (1) the current magnitude of traffic in agricultural, ornamental and other plant materials, including that of no economic value; and (2) the diseases and pests involved in import of all such plant materials (5.1 to 5.3).

22.4 Both types of organisations should be equipped with adequate

cataloguing facilities for pests and pathogens likely to find entry with imported plant materials from other countries. They should mutually exchange complementary information compiled by them(5.4).

22.5 It is also necessary to channel all imports of plant propagating materials (at least of those involving quarantine risks of national significance) only through sea and air ports of Bombay, Madras and Calcutta and air port of Delhi. This work should be entrusted to competent plant introduction agencies such as : Division of Plant Introduction, IARI, ICAR (for agri-horticultural plants); Forest Research Institute (for plants of forestry importance); and Botanical Survey of India (for plants of general interest). Botanical ./; These agencies should serve as service agencies for international exchange of plant material for the benefit of all States, institutions and parties. The FRI Agency is located at Dehradun which is not directly connected with outside world. It should have some collaborative arrangement with the ICAR agency (5.4 to 5.7, 5.12). Since the ICAR agnecy caters to the needs of all Indian crop scientists, it should be placed under direct administrative control of the ICAR and yet head-quartered at IARI campus (7.16).

22.6 License to import plant material maybe granted to parties other than the official plant introduction agencies in exceptional cases, only after consulting the agency concerned and the Plant Quarantine Directorate. Foreign technical missions would need no such license, but they should not import plant material through channels having diplomatic immunity. All plant introductions obtained in every manner, including the confiscated irregular ones, should be routed through the Plant Quarantine Directorate and the concerned plant introduction agency (5.9 to 5.11, 5.13).

22.7 A national register of plant introductions being maintained at various locations in the country should be maintained at a central place like that of the ICAR agency and sub-registers should be maintained at the other two agencies (5.8).

22.8 Research and refresher training courses on plant quarantine science

should be conducted at IARI by the ICAR plant introduction agency having a strong post-entry quarantine base (5.14).

22.9 The existing post-entry plant quarantine base of the FRI agency will have to be considerably strengthened. Since the BSI Agency will have relatively limited plant introduction activity, it may forge some working arrangements with the station of the Plant Quarantine Directorate at Calcutta (7.17, 7.18).

22.10 The staff and facilities of the Plant Quarantine Stations at the main points of entry (Bombay, Madras, Calcutta and Delhi) for plant introductions should be considerably strengthened. (7.19, 7.20).

22.11 The staff and facilities of the three plant introduction agencies need to be strengthened to varying degrees, commensurate with their work load. For example, the ICAR Agency should have additional stations at Jorhat, Kodaikanal, Bangalore and Trombay. Phytosanitary Propagation House facilities, duly equipped and staffed, should be expeditiously arranged at Delhi, Simla, Coimbatore, Trombay, Rajahmundry, Dehradun and Calcutta. The various schemes for establishment of National Seed Storage Laboratory and expansion and consolidation of the ICAR agency for plant introduction and its Phytosanitation Laboratory Units at IARI should be expeditiously implemented (7.1 to 7.13).

22.12 With a view to stemming genetic erosion, the ICAR plant introduction agency should be made responsible for plant exploration and collection work within and outside the country. To facilitate former it should be adequately equipped with exploration vans, among other things and to facilitate latter, roving Plant Introduction Attaches should be posted in some important cultivated and related wild plant regions. Plant Introduction and Plant Quarantine scientists should have increasing opportunites to visit countries having efficient services of professional interestto them. The Indian Missions should extend all facilities to explorers of plant

introduction agencies and scientific personnel visiting abroad (7.14, 7.15, 7.21, 10.3).

22.13 The authorised plant introduction agencies should enjoy certain special standing concessions such as : blanket license to exchange plant materials with any country, foreign exchange sanctions, facility to pay for cost and incidentals in foreign currency with the help of Indian missions abroad, permission to pay freight charges in Indian currency, working arrangements with Indian air or surface shipping lines to pay dues on production of bill, customs duty- free clearance of all introductions, etc. The concerned Government authorities should arrange for these (9.1 sub-items 1 to 6, 10.1).

22.14 The Plant Quarantine Directorate should post its whole-time representatives at the Foreign Post Offices at Delhi, Bomaby, Calcutta and Madras to facilitate quick clearance of plant introductions arriving in distinctively marked packages through postal service. The Customs officials should inspect such parcels by opening them only in a laboratory/the Plant Quarantine Station concerned (8.1 sub-item 7, 8.2 to 8.4).

22.15 All existing and forthcoming provisions and facilities should be made use of for enforcing domestic plant quarantine and no parochial interest should dominate national interests (6.1 to 6.8).

22.16 Export of plant propagating material belonging to plants of key importance to Indian economy may be banned and that of plants likely to get extinct should be restricted. To ensure that this is done and to keep centralised records of supplies abroad, all exports of plant propagating materials should be supported by a ' No Objection Certificate' from the concerned plant introduction agency, in addition to phytosanitary certificate and identity verification plant inspection cerficate issued by the same agency or any alternative competent Government of India accredited agencies (9.1 to 9.13).

22.17 Plant Introduction agencies and Directorate of Plant Quarantine should jointly prepare publicity material on rules relating to plant collection, and national and international movement of plant materials with reference to India. Copies of such publicity material should also be available from Indian Missions abroad to all persons coming to India (10.2).

22.18 A standing National Advisory Committee for Plant Introduction and Quarantine should be constituted to: (1) Update the rules made under DIP Act of 1914, including those for domestic quarantine by revising them in the light of the latest scientific information available and recommendations made in this Report (6.8, 11.1, 11.2, 12.1 to 12.3); (2) arrange simultaneous incorporation of all such changes in the publications, Customs Act, Customs Manual, Import Trade Control Policy, Export Trade Control Policy Post Office Guide etc. (11.3, 12.3); and (3) prescribe norms of facilities and staff the Government authorised plant introduction agencies must have in order that they may continue to retain their delegated authority (7.1).

22.19 Movement of animals used in lac, silk and honey producing industries may be controlled by the appropriate agencies that control the movement of plant materials (6.6).

22.20 Import of livestock, including poultry, as individual animals or their eggs or semen, would be essential for a long time to come since performance of indigenous livestock is comparatively poor (13.1, 13.2, 13.4).

22.21 Import of foreign biological materials essential for tackling effectively disease control problems of livestock in India would also be similarly essential (13.3).

22.22 Import of livestock and related biological materials is presently regulated through issue of Import Permit or Customs Clearance Permit by the Animal Husbandry Commissioner to the Government of India. This Government permits duty free clearance of live-stock imported solely for breeding purposes (13.5 to 13.7, 15.5, 15.6).

22.23 The rules relating to animal quarantine and post-entry quarantine procedures are framed by the various State Governments under the provisions of the Livestock Importation Act (1898) of the Government of India. Customs officials, assisted by Animal Husbandry officials of the concerned State Government, deal with incoming livestock and allied materials of animal quarantine significance at the specified ports of entry viz. sea ports of Bombay, Madras, Calcutta and Cochin; air ports of Delhi, Madras, Calcutta, Cochin and Tiruchirapalli; and Attari on Indo-West Pakistan border. The State Animal Husbandry official is empowered to order the detention of any livestock on animal quarantine grounds, at cost payable by the importer(15.1 to 15.4, 15.12, 15.13).

22.24 Imported livestock are being required tobe accompanied by specified animal health certificates (15.7 to 15.11).

22.25 Import of some livestock products is regulated under the provisions of the Preventionof Food Adulteration Act (1954), the Imports and Exports (Control)Act (1947), and the Sea Customs Act (1878). No rules have been framed for import of some products of animal origin, such as wool, hair and skins (15.14 to 15.17).

22.26 Taking into considerations, among other things, the recommended International Zoo-sanitary Regulations and efficiently organised Animal Quarantine Services of some countries such as USA and Japan, the Government of India sanctioned the setting up of a Central Organisation for Animal Quarantine and Certification Service in the Fourth Five Year Plan (14.6, 14.7, 15.19 to 15.21).

22.27 Export of some products of animal orgin is regulated by policies backed by Imports and Exports (Control) Act, 1947. There is no statutory regulation to control export of livestock. Health certification of some livestock or its products being exported is being done presently by multifarious agencies in an unsatisfactory manner. The Service Organisation

mentioned in the preceding para is to be set up for arranging such Certification also, with a view to giving a fillip to the export trade in livestock and livestock products (15.18, 16.1 to 16.3).

22.28 In view of the foregoing account relating to livestock materials, it is recommended that the scheme for establishment of Animal Quarantine and Certification Service by the Government of India should be speedily implemented. A comprehensive act for regulating importation of animal products and biological materials such as virulent strains of pathogens, sera and vaccines, should be formulated. Authority to implement the Livestock Importation Act should vest with the Government of India instead of with the various State Governments. All imports of livestock should be centralised through the Animal Husbandry Commissioner to the Government of India and yet the Central Government should authorise competent institutions to certify health condition of animals held in quarantine at different locations. Adequately staffed and equipped Animal Quarantine Stations and Certification Centres should be set up at each specified port of entry (17.1 to 17.3, 17.5 to 17.7, 18.1 to 18.4, 19.1).

22.29 A special laboratory in isolation (say on some off-shore island) should be established for developing diagnostic investigation and treatment facilities for curing valuable animals of exotic diseases (17.8).

22.30 Indian scientists connected with livestock introduction work should be encouraged to go abroad to study quality and quantity of animal wealth available as well as their health and management conditions (17.9).

22.31 Comprehensive legislation for regulating exports of livestock and its products and for Domestic Animal Quarantine should be framed (20.1, 20.2, 17.4).

22.32 Standing National Advisory Committee on Animal Introduction and Quarantine may be constituted to keep health and other regulations for international and national movement of livestock and its products abreast of the times.